

What is claim d is:

1. An optical transmission controller comprising:
 - a semiconductor laser;
 - a semiconductor laser drive section for allowing the
 - 5 semiconductor laser to output an optical signal;
 - a monitor photoreceptor for monitoring the optical
 - signal output from the semiconductor laser;
 - a waveform detection means for detecting a fall state
 - of a waveform of the optical signal output monitored by the
 - 10 monitor photoreceptor; and
 - a phase relation adjustment means for adjusting a
 - phase relation between a fall timing of an input current fed to
 - the semiconductor laser and a variation timing of a relaxation
 - oscillation of the waveform of the optical signal output in
 - 15 accordance with a detection result of the waveform detection
 - means to reduce the relaxation oscillation of a fall portion of
 - the waveform of the optical signal output.
2. The optical transmission controller of claim 1, wherein
- 20 the phase relation adjustment means comprises a bias current
- setting means for adjusting a bias current of the
- semiconductor laser within a range between values smaller
- than an oscillation threshold value to vary a delay time in the
- optical signal output against the input current and thereby to
- 25 vary a phase of the relaxation oscillation of the waveform of the

optical signal output with respect to the fall timing of the input current.

3. The optical transmission controller of claim 1, wherein
5 the phase relation adjustment means comprises a modulation current setting means for adjusting the input current of the semiconductor laser to vary a frequency of the relaxation oscillation of the waveform of the optical signal output and thereby to vary a phase of the relaxation oscillation of the
10 waveform of the optical signal output with respect to the fall timing of the input current.

4. The optical transmission controller of claim 2, wherein the phase relation adjustment means further comprises a
15 modulation current setting means as defined in claim 3.

5. The optical transmission controller of claim 2 or 4, wherein the variation in the delay time, caused by the bias current setting means adjusting the bias current of the
20 semiconductor, is within one period of the relaxation oscillation of the optical signal output.

6. The optical transmission controller of claim 1, wherein the phase relation adjustment means comprises an input
25 signal control means for adjusting a switching-off timing of the

input current to vary the fall timing of the input current with respect to a phase of the relaxation oscillation of the waveform of the optical signal output.

- 5 7. The optical transmission controller of claim 6, wherein the variation in the delay time, caused by the input signal control means adjusting the switching-off timing of the input current, is within one period of the relaxation oscillation of the optical signal output.

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8. The optical transmission controller of claim 3 or 6, wherein a value of the bias current is set to be lower than an oscillation threshold value of the semiconductor laser.